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Titel
Spatial distribution of organic carbon in the Atacama Desert, Chile

Abstract
The Atacama Desert in northern Chile is known as the driest region on earth; however traces of life, can still be found. Soils are the habitat and reservoir for plants and microorganisms, which leave their fingerprints as organic residues. Here we identify and quantify organic carbon in soil profiles and along potential plant dispersal corridors in the Atacama Desert. We hypothesize that preferential pathways or barriers of the dispersal of life exist, which can be related to soil properties such as bulk density. We further assume that due to dust and salt accumulation at the surface, in particular the subsoils will reveal an unique though little explored archive of organic matter. The analytical assessment of C_{org} at very low levels is challenging. It was found that SOC in hyperarid soils ranged from 1.8 – 125 µg C per g soil for 0-1 m (1). We here present an improved C_{org} analysis, which is based on a temperature gradient method (DIN19539; Soli TOC cube, Elementar, Hanau). This allows combustion of samples with up to 5 g sample weight without the need to remove carbonate. This avoids loss and increases precision of C_{org} quantification at lowest concentrations. We can show that C_{org} contents decrease from 1.47 % to 0.1 % in the first 14 km of the gradient. However, first results suggest that within the hyper-arid core of the Atacama C_{org} contents increase. This gives first hints to the vegetation history of the desert and the dispersal of life.

Literatur
[1] Soil carbon distribution and site characteristics in hyper-arid soils of the Atacama Desert: A site with Mars-like soils ; Valdivia-Silva et al., 2012.